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FOR MANAGERS OF MANUFACTURING TECHNOLOGY

Managing the Materials Matrix

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Just-in-Time

The Home-Grown Technique Comes Home

JIT production methods are being brought back from Japan. But the translation is garbled. "Common Sense Manufacturing" may be more to the point.

By Sandra Brooks Dornan
Associate Editor

In 1980 the Automotive Industry Action Group (AIAG), Southfield, MI, sponsored America's first Just-in-Time (JIT) seminar with representatives from Japan at Ford Motor Co.'s World Headquarters in Dearborn, MI. And, as with just about everything else Japanese in these highly competitive times, most American manufacturing management raised the Red, White and Blue against the foreign production philosophy. After all, it couldn't possibly be adapted for American manufacturing methods.

For the handful of companies that equated JIT with "profit through inventory reduction," the results have been severe failures: reduced productivity and worsened supplier relations, to name two. Divergent and incompatible cultures, attitudes, and values are cited as prime culprits undermining time-tested U.S. manufacturing methods.

During the past seven years, however, instances of manufacturing excellence have, in fact, intensified and grown in number throughout this country and across industry classification.

Ironically, such successes and failures are attributable to the same root cause—JIT.

What It Is, What It Is Not

The JIT concept is not a radical departure from traditional manufacturing methods, nor is it a mystical extension of the Japanese culture. In fact, its roots are as American as the proverbial apple pie, or more exactly, Henry Ford's pioneering manufacturing methods, typified by the assembly line.

JIT has evolved from more than a century of developing manufacturing techniques, such as those preached by Ford, Deming, Juran, and others. Some Japanese manufacturers, most notably Toyota Motor Corp., like their American counterparts, have served as a sort of laboratory incubator, implementing and refining JIT manufacturing concepts to the point of optimal benefit.

Unfortunately, such isolated success stories have instigated a "jump on the bandwagon" syndrome which has, due to misunderstanding, lack of commitment, and neglected "care and feeding," resulted in anything but what JIT concepts represent.

Common Sense Manufacturing

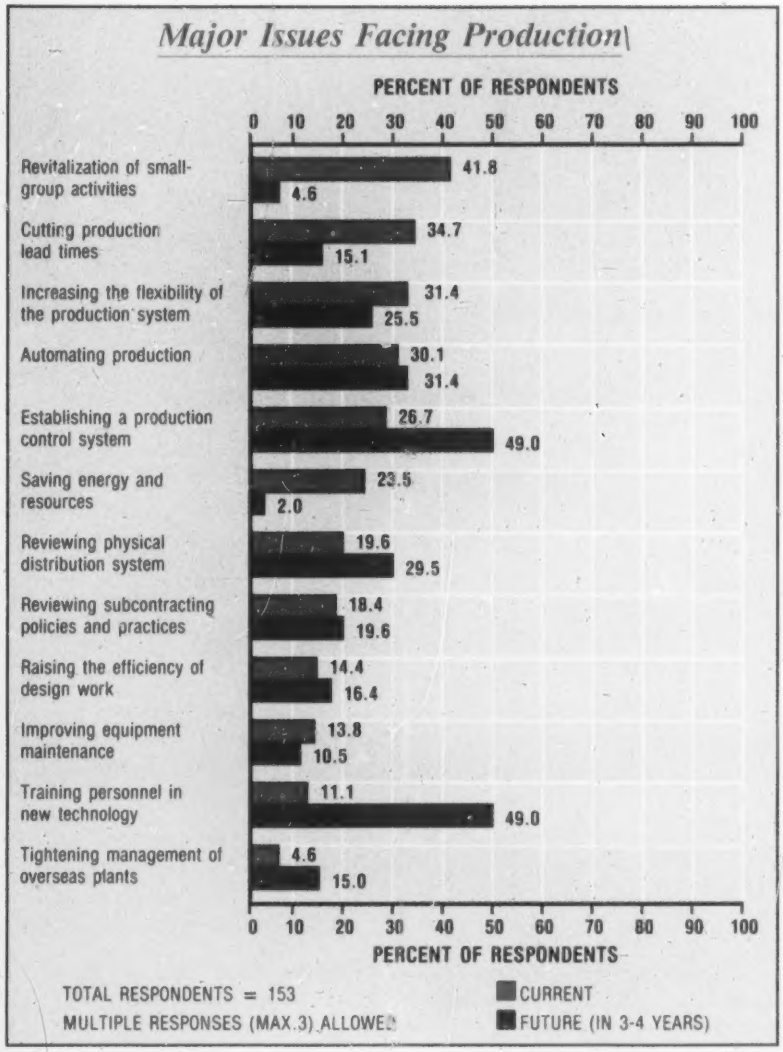
The acronym "JIT" fails to define the concept's goals: quality, reliability, productivity, profitability. Further, it promotes confusion which hinders success. Finally, it camouflages the improvement efforts often pursued under another name or hidden within manufacturing programs being undertaken, with success, by a number of companies. Therefore, let's talk about "Common Sense Manufacturing".

The most pronounced, and dangerous, departure from Common Sense Manufacturing is the JIT misconception that drastic inventory reductions are the panacea for all manufacturing operations.

Common sense tells you that jumping into a stockless production scenario serves only to push financial liability to suppliers (who are likely to stumble under the burden) and accomplishes nothing to promote quality, product reliability, productivity or long term, consistent profitability.

That's why the majority of companies fail in their JIT efforts. They focus on inventory reduction and lose sight of common sense. "JIT is only one small part of a much larger integrated approach," says George W. Sibbald, vice president, Genovation, San Francisco.

It's true that the cost of inventory averages 20 to 30 percent, which, in some cases, is more than the cost of labor and surely needs reduction.



Major Issues Facing Production. ***"A 1985 survey conducted by the Japan Management Association (JMA) indicated that Japanese companies believe their most pressing current issues are revitalizing the activities of small group activities and cutting production lead time." Source: Productivity, Inc.***

One proponent of JIT, Chrysler Motors, has reduced its steel inventories from 32.6 days to six days—and plans two and one-half days by 1990.

Just-in-Time manufacturing is a "state of mind, coupled with a set of tools, dedicated to continuous and relentless reduction of waste," according to Jack Little, consultant, American Productivity Center, Houston.

It includes strategies and tactics such as simplifying and compacting factory layouts, Total Quality Control (TQC), preventive maintenance scheduled on the second shift, setup reduction, and a flexible workforce with reduced labor classifications.

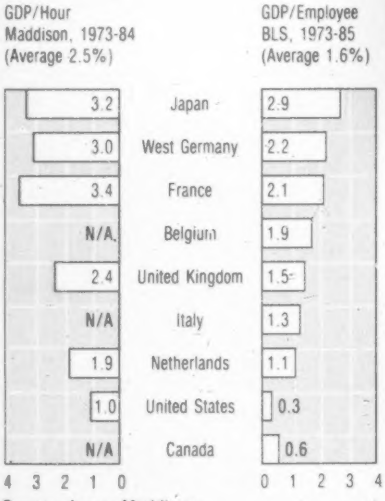
"The key concept of JIT is adding value," states Edward J. Hay, senior vice president and director, Just-in-Time Services, Rath & Strong, Lexington, MA. Go back to Ford's assembly line—"it's efficiency lies in balance, synchronization, and smooth, one-at-a-time flow. It operates with very little waste. It uses minimum resources, nearly all of which directly add value to the product," says Hay.

That's the culture shock. Not Japanese to American, but in the way companies, throughout the world, have come to manage manufacturing. The problem with Common Sense Manufacturing is that too often it represents so much change—such as reducing the vendor base, or not measuring direct labor in manufacturing, or focusing on keeping material moving as opposed to keeping people and machines busy—that companies fail to keep the commitment to "relentless reduction of waste."

All Japanese companies are not proficient in JIT and Common Sense Manufacturing techniques. It was only in 1984, for example, that a Sumitomo Electric company plant in Japan, experiencing so many problems that a 50 percent defect rate was considered normal, embarked on its manufacturing improvement program, known as Day-To-Day Management.

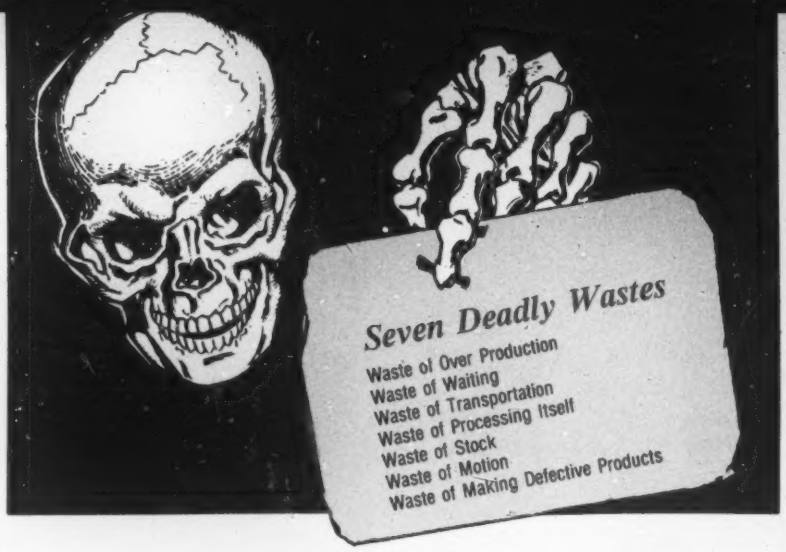
Shigeo Shingo, president of the Institute of Management Improvement, Japan, who (with Taiichi Ohno, the former vice president of Toyota and "father of JIT") is credited with Toyota Motor Corp.'s manufacturing success. During an interview in Chicago last fall, Shingo stated that at times that company produced as much, if not more, scrap as American automobile manufacturers. It took that company 30 years of commitment and dedication to perfect its use of a range of Common Sense Manufacturing tactics.

International Productivity Growth (Percent)



Source: Angus Maddison, Bureau of Labor Statistics

International Productivity Growth. ***"The United States continues to be overshadowed by the lead of Japan and the other major industrial countries of the world in productivity growth, whether it is measured in Gross Domestic Product (GDP) per employee or GDP per hour." Source: Angus Maddison, Bureau of Labor Statistics.***



JIT Opportunities (Improvement Percentages)

	Automotive Components Repetitive	**Flexible Packaging** Process	**Electrical Cons. Goods** Repetitive	**Mechanical Equipment** Job Shop	**Fashion Goods** Repetitive
Manufacturing Lead Time Reduction	89	86	85	83	92
Productivity Increase					
Direct	19	50	N/A	5	29
Indirect/Salary	60	50	38	21	29
Scrap/Rework Reduction	50	63	26	33	61
Purchased Material Price Reduction	N/A	7	N/A	6	11
Inventory Reduction					
Raw Material	35	70	50	73	70
WIP	89	82	85	70	85
Finished Goods	61	71	90	0	70
Setup Reduction	75	75	94	75	91
Space Reduction	53	N/A	80	N/A	39
Capacity Increase	N/A	36	N/A	N/A	42

JIT Opportunities. "Surveys indicate that substantial gains can by realized by applying JIT techniques. The chart illustrates potential improvement percentages for a variety of manufacturing cost drivers." Source: Rath & Strong.

Common Sense JIT Implementation

Find out what JIT *really* means for material deliveries, for one-piece flow production, for small lot production, with respect to single minute exchange of dies, KanBan, Andon, Poka-Yokes and all of the other JIT tools, advises John L. Warne, retired president, Omark Industries, Portland, OR.

Then, accept and commit to adoption of the broadest definition of the JIT waste-elimination strategy. To be effective, the strategy will expand and be redefined over time. Get people involved in active JIT roles. Delegate responsibility to create the time not only to solve manufacturing problems but also to draw from the resources within all manufacturing functions to solve problems.

Start solving problems from these Seven Deadly Wastes (noted above) provided by Robert Minor, manufacturing manager, AMOT Controls Corp., Richmond, CA. Minor received on-site JIT training at Toyota City as a line supervisor and returned to the U.S. to help bring on-line the New United Motor Manufacturing Inc. (NUMMI), Fremont, CA, the GM/Toyota joint venture.

Always remember "continuous and relentless elimination of waste." The initial investment is people's time. The gains are: NUMMI—twice as productive as the GM norm; Omark—eliminated $3 million finished goods inventory; AMOT—reduced set-up by 75 percent by changing the process sequence, not an investment; Harley-Davidson, York, PA—50 percent reduction in inventory, reduced scrap and rework by 59 percent, increased productivity by 32 percent; Navistar, Chicago—$500 million inventory reduction, productivity up to 14 units per employee from eight units per employee in 1981. P

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